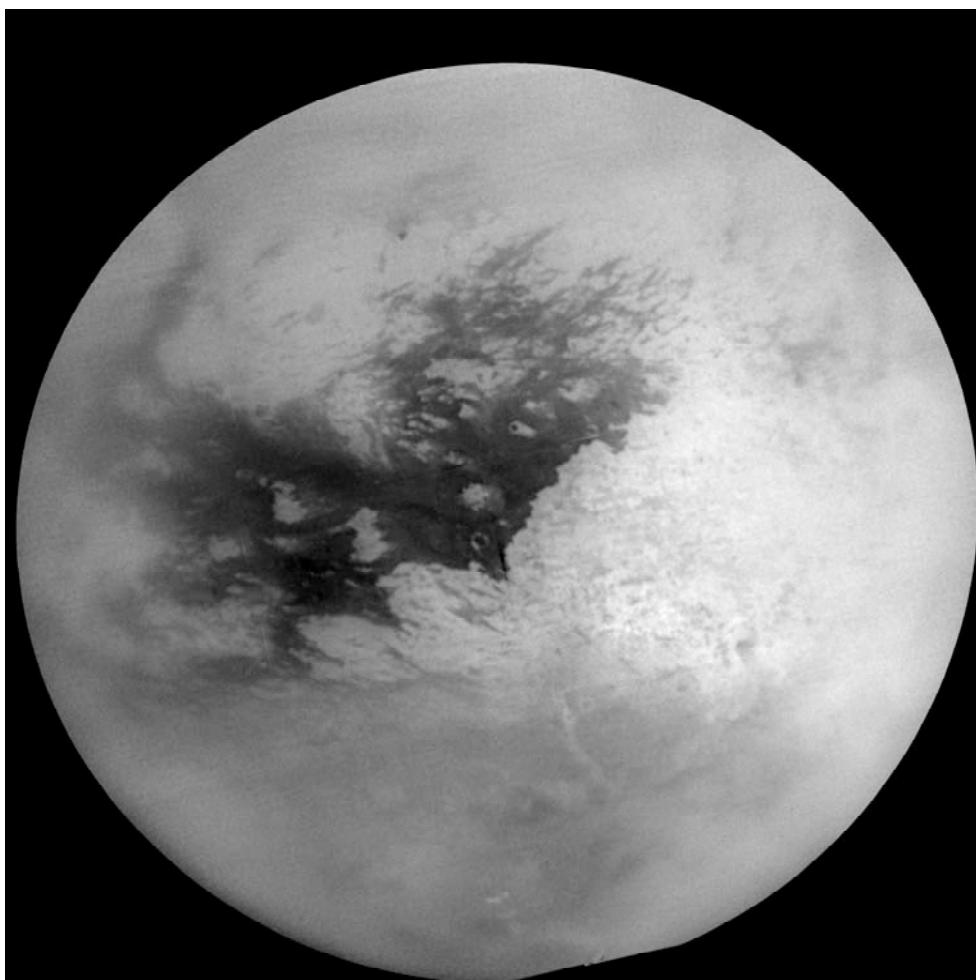


# CASSINI



## *TITAN-4* MISSION DESCRIPTION

March 2005

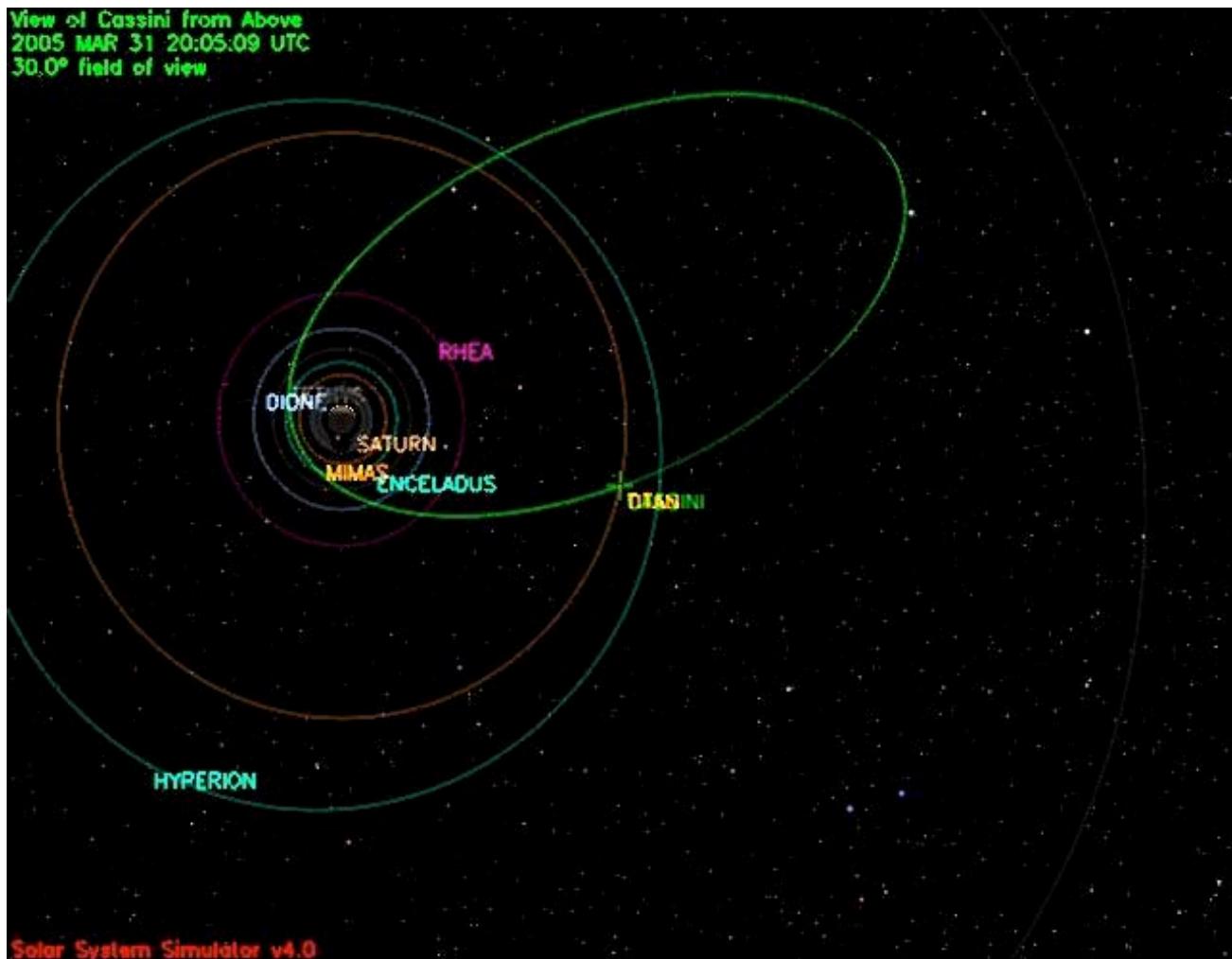
**Jet Propulsion Laboratory**  
California Institute of Technology

PD 699-100, Rev O (supplement)  
JPL D-5564, Rev O (supplement)

## 1.1 OVERVIEW

Titan-4 is the fifth targeted encounter of Saturn's largest moon. The flyby occurs on Thursday March 31 at 20:05 SCET (01:18 PM Pacific Standard Time). The closest approach will be at an altitude of 2402 km (1493 miles) above the surface at a speed of 5.9 km/sec (13,200 mph). Titan has a diameter of 5150 km (3200 miles), so the spacecraft passes just inside two Titan radii.

The encounter is set up with two approach maneuvers: an apoapsis maneuver (OTM#18) on 19 March and another Titan targeting maneuver (OTM #19) on 27 March, four days before the encounter. This Titan flyby encounter will be the first outbound flyby of the Tour, with Saturn periapsis occurring almost two days earlier. The observations will be done using reaction wheels for attitude control. The local time at the closest approach will be near dawn. The flyby geometry is shown below.



## 1.2 ABOUT TITAN

Titan is one of the primary scientific interests of the Cassini-Huygens mission. Through observations by Earth based telescopes and the Voyager spacecraft, Titan has been revealed to be an intriguing world both similar in nature to Earth and unique among

both satellites and terrestrial planets. The largest of Saturn's satellites, Titan is larger than the planets Mercury or Pluto. Titan is the only satellite in the solar system with an appreciable atmosphere. Like Earth's atmosphere, Titan's atmosphere is composed mostly of Nitrogen, yet appears to have few clouds. However, it also contains significant quantities of aerosols and organic compounds (hydrocarbons), including methane and ethane. Although Titan's thick smoggy atmosphere masks its surface, scientists have speculated Titan's surface could contain solid, liquid and muddy material creating features such as lakes, seas, or rivers. Additionally liquid reservoirs may exist beneath the surface forming geysers or volcanoes that feed flowing liquid onto the surface.

Titan's peak surface temperature is about 95 Kelvins, too cold for liquid water, and due to its thick atmosphere, the pressure at the surface is 1.6 times greater than Earth's atmosphere. At this temperature and pressure, chemicals such as methane, ethane, propane, ammonia, water-ice and acetylene may be involved in complex interior-surface-atmosphere chemical cycles resulting in eruptions, condensation and precipitation (or rain). Initial observations obtained by Cassini during the first three passes of Titan provided our first close up views of Titan in wavelengths ranging from visible light to infrared to radar. The Huygens probe successfully returned atmospheric data and images of the surface, providing ground truth for the Cassini Orbiter measurements. The results show a mysterious world even more complex than previously thought. The diversity of surface composition and its connection to Titan's geologic features remains a fundamental question. Huygens results indicate the methane exists as a liquid just below the surface and may rain from the atmosphere periodically. Clouds in Titan's atmosphere were observed in the southern hemisphere, yet no clear explanation has emerged on what the clouds are composed of, or why more clouds do not exist. Observations of Titan's interaction with Saturn's magnetosphere indicates the presence of complex processes complicated by Titan's occasional emergence out of Saturn's magnetosphere into the solar wind.

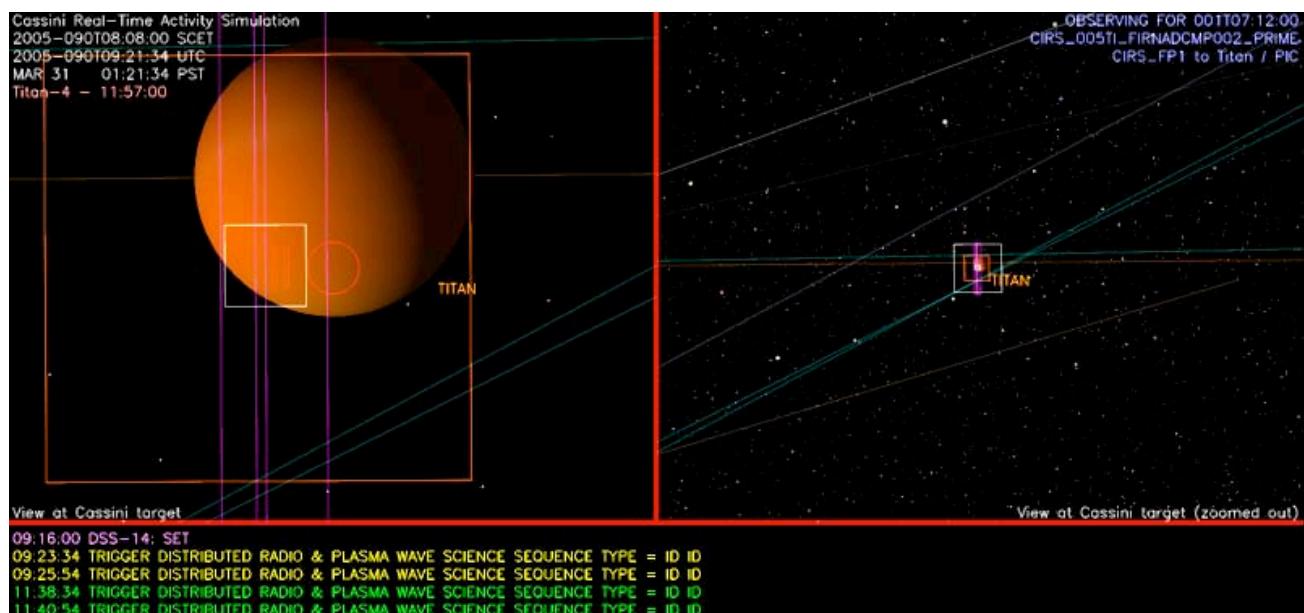
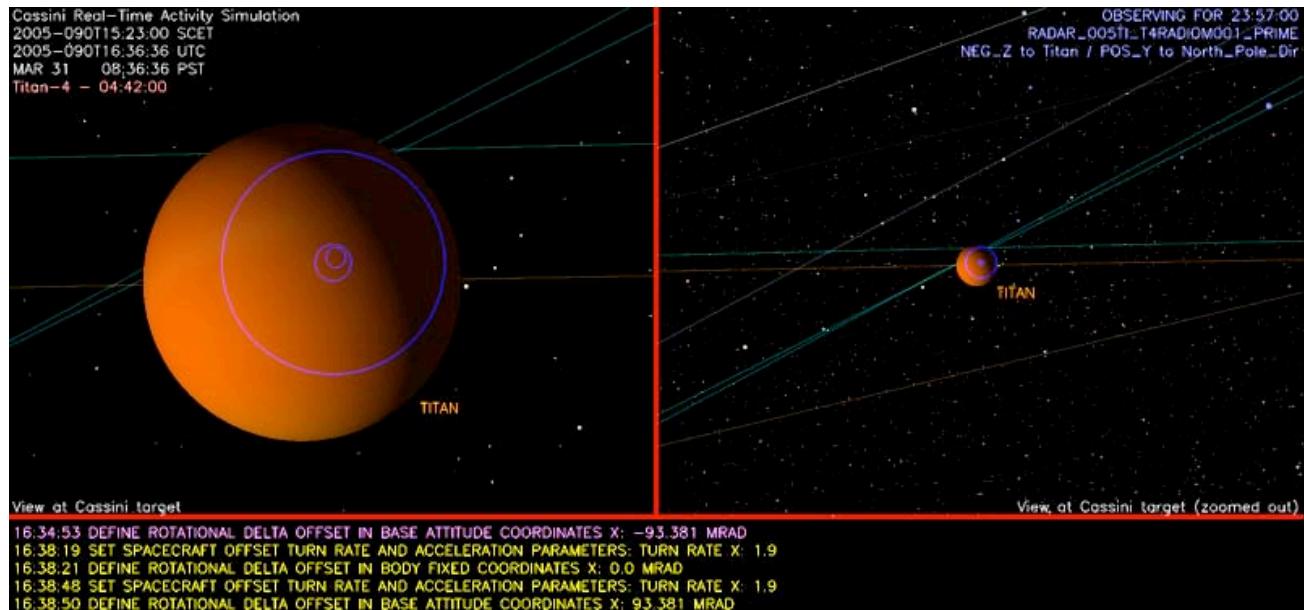
### 1.3 TITAN-4 SCIENCE ACTIVITIES

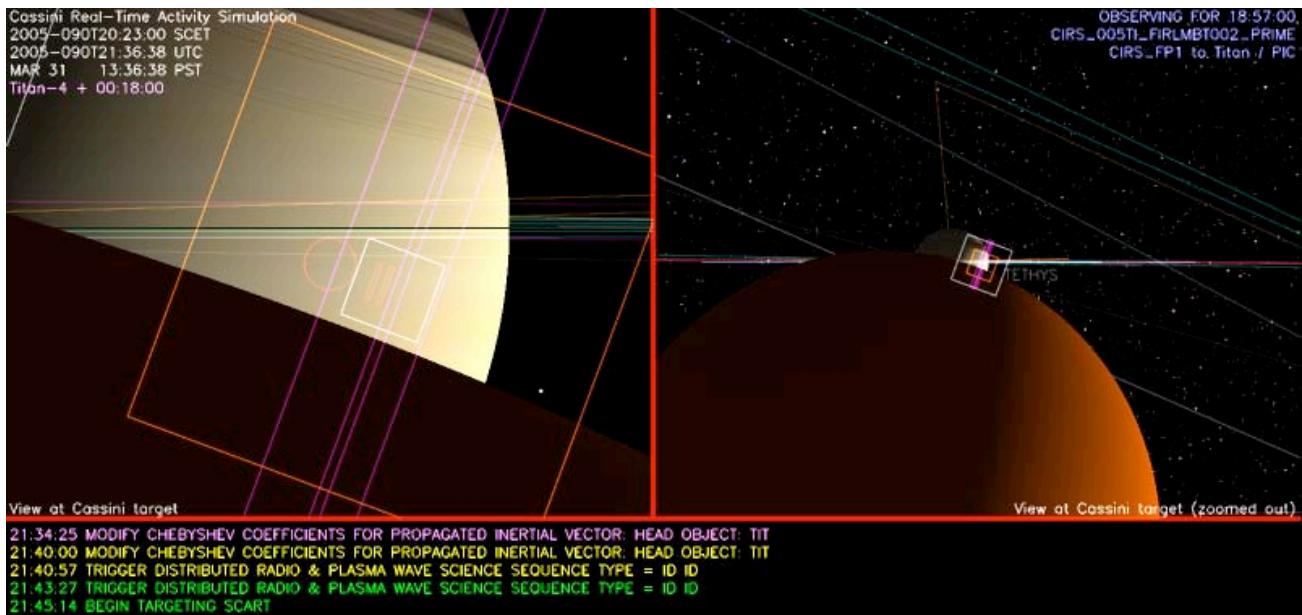
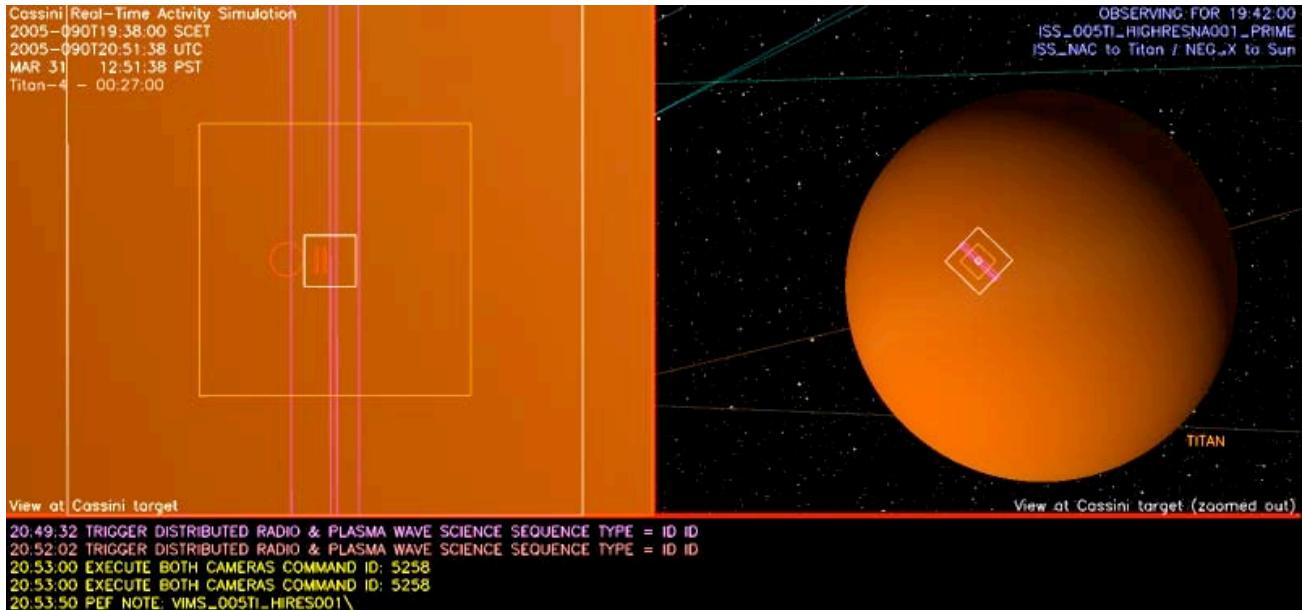
There will be 3716 Mbits received on Earth between 8:30 am and 5:40 pm on Friday, 1 April. The science activities are summarized below:

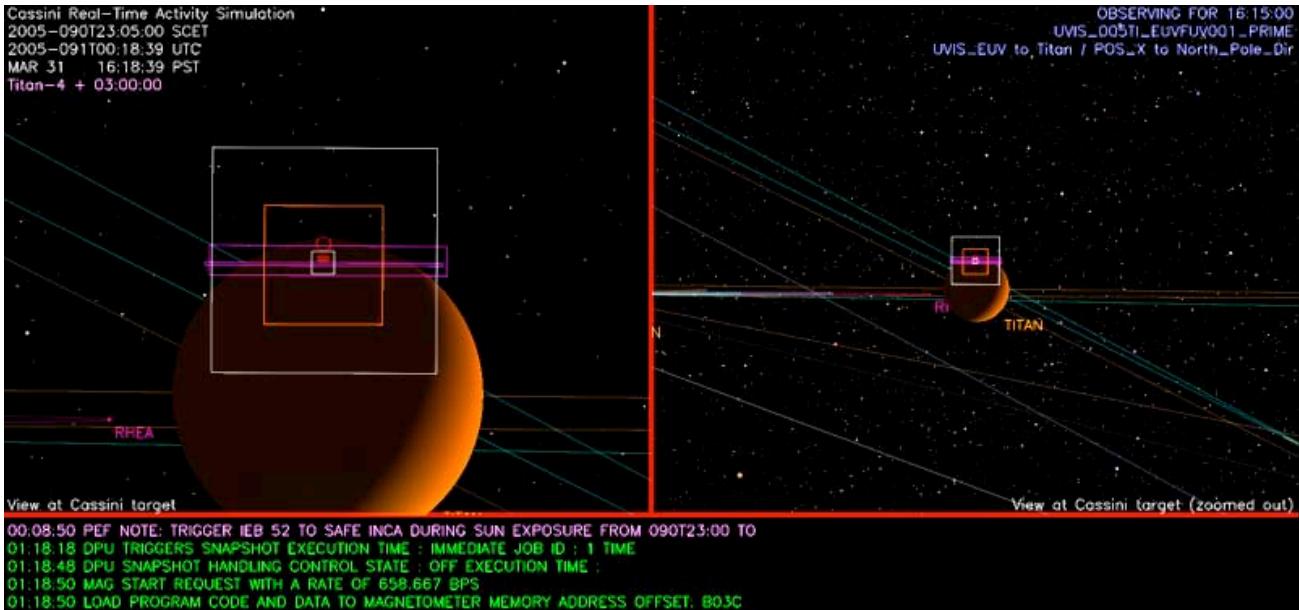
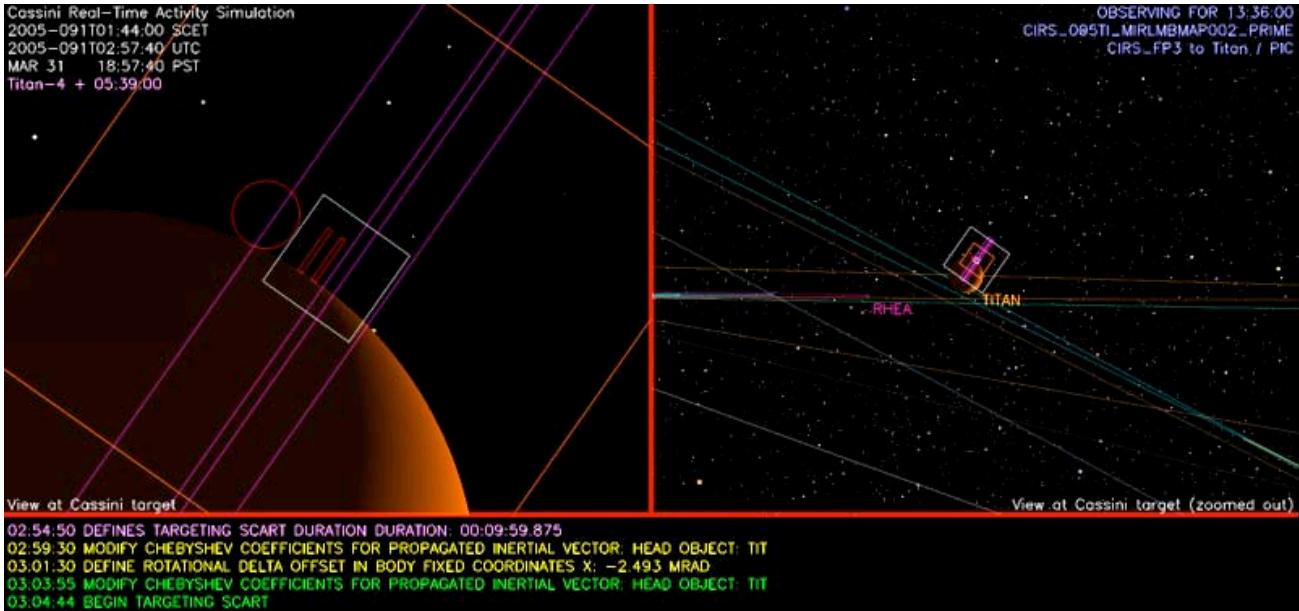
- UVIS EUVFUV observations to map airglow emission lines from nitrogen and carbon and measure reflected sunlight from Titan's haze which carries information about particle size and properties.
- RADAR radiometry complementary coverage to Ta.
- VIMS evolution of clouds and other transient features on Titan. High resolution compositional mapping of the northern hemisphere.
- RPWS to determine thermal plasma parameters (electron temperature and density), investigate the interaction between the magnetosphere and Titan's ionosphere, search for lightning on Titan, and look for new phenomena, such as radio emissions from the Titan-magnetosphere interaction.
- Detailed study of Titan's interaction with Saturn's magnetosphere, as well as further constrain the possible internal magnetic field of Titan. Characterize the ion composition and charge state near Titan
- CIRS observations of Titan's atmosphere, in particular the northern hemisphere, measuring vertical profiles of temperature, looking for aerosols, and measuring distribution of CO, HCN, and CH4.

## 1.4 TITAN-4 SAMPLE SNAPSHOTS AND SEQUENCE OF EVENTS

### 1.4.1 Snapshots







## 1.4.2 Titan-4 Timeline

### Cassini Titan-4 Timeline - March 2005

Colors: yellow = maneuvers; blue = geometry; pink = T4-related; green = data playbacks

Orbiter UTC	Ground UTC	Pacific Time	Time wrt T4	Activity	Description
058T00:36:00	Feb 27 01:49	Sat Feb 26 05:49 PM	T4-32d19h	Start of Sequence S09	Start of Sequence which contains Titan-4.
086T20:00:00	Mar 27 21:13	Sun Mar 27 01:13 PM	T4-04d00h	OTM #19 Prime	Titan-4 minus 3 day targeting maneuver
087T19:17:00	Mar 28 20:30	Mon Mar 28 12:30 PM	T4-03d01h	OTM #19 Backup	
090T05:50:00	Mar 31 07:03	Wed Mar 30 11:03 PM	T4-14h15m	Start of the TOST Segment	
090T05:50:00	Mar 31 07:03	Wed Mar 30 11:03 PM	T4-14h15m	Turn cameras to Titan	
090T06:20:00	Mar 31 07:33	Wed Mar 30 11:33 PM	T4-13h45m	Deadtime	75 minutes long; used to accommodate changes in flyby time
090T07:35:16	Mar 31 08:48	Thu Mar 31 12:48 AM	T4-12h30m	Far Infrared, long integration nadir composition observation	Obtain information on CO, HCN, CH4, etc.
090T11:35:16	Mar 31 12:48	Thu Mar 31 04:48 AM	T4-08h30m	Medium resolution imaging combined with wide angle camera photometry	Design specifically worked in coordination with Infrared Imager (VIMS) for overall coverage
090T14:35:16	Mar 31 15:48	Thu Mar 31 07:48 AM	T4-05h30m	RADAR Radiometry + scatterometry	
090T19:35:16	Mar 31 20:48	Thu Mar 31 12:48 PM	T4-00h30m	High Resolution Imaging	Specifically targeting the surface covered in T3 closest approach RADAR SAR
090T20:05:16	Mar 31 21:18	Thu Mar 31 01:18 PM	T4+00h00m	Titan-4 Flyby Closest Approach Time	Altitude = 2402 km (1493 miles), speed = 5.9 km/s (13,200 mph); moderate phase inbound (~58), 65 deg phase at closest approach, high phase outbound (~124)
090T20:05:16	Mar 31 21:18	Thu Mar 31 01:18 PM	T4+00h00m	Slow scans across Titan's atmosphere at the limb	Measuring vertical profiles of temperature in Titan's atmosphere
090T20:50:16	Mar 31 22:03	Thu Mar 31 02:03 PM	T4+00h45m	Slow scans across Titan's atmosphere at the limb	Looking for aerosols
090T21:20:16	Mar 31 22:33	Thu Mar 31 02:33 PM	T4+01h15m	Far Infrared, limb integration at two locations	Measuring vertical distribution of CO, HCN, CH4
090T22:05:16	Mar 31 23:18	Thu Mar 31 03:18 PM	T4+02h00m	Several slow scans across Titan's visible hemisphere to form spectral images	
091T00:35:16	Apr 01 01:48	Thu Mar 31 05:48 PM	T4+04h30m	Slow radial scans across Titan's atmosphere	Looking for vertical temperature in Titan's atmosphere
091T04:05:16	Apr 01 05:18	Thu Mar 31 09:18 PM	T4+08h00m	Far Infrared, long integration nadir composition observation	Obtain information on CO, HCN, CH4, etc.
091T08:05:16	Apr 01 09:18	Fri Apr 01 01:18 AM	T4+12h00m	Multiple slews across Titan	Looking for information on thermal structure of Titan's stratosphere
091T14:35:16	Apr 01 15:48	Fri Apr 01 07:48 AM	T4+18h30m	Deadtime	18 minutes long; used to accommodate changes in flyby time
091T14:53:00	Apr 01 16:06	Fri Apr 01 08:06 AM	T4+18h48m	Turn to Earth-Line	
091T15:22:00	Apr 01 16:35	Fri Apr 01 08:35 AM	T4+19h17m	Begin Playback of T4 Data	Madrid 70M
092T00:22:00	Apr 02 01:35	Fri Apr 01 05:35 PM	T4+01d04h	End Playback of T3 Data	

### 1.4.3 Titan-4 Data Table

SCET Date (YYYY-DOYTHH:MM:SS.ss) UTC	Hours wrt to epoch	Minutes wrt to epoch	Range	Altitude	S/C North Lat.	S/C West Long. (deg)	S/C inertial Velocity (km/sec)	S/C Radial Inertial Velocity	Central Boyd Angular Diameter (mrad)	Sun-S/C-Central_Body Angle (deg)	Phase: Sun-Central_Central_Body-S/C Angle (deg)	Sun-S/C-central body Angle (deg)	S/C Local True Solar Time wrt Central body	Sub-solar latitude wrt Central Body (deg)	Sub-solar West Longitude wrt Central Body SMEQPM Date (deg)
2005-089T20:05:15.99	-24	-1440	516495	513920	0.1	1.5	6.927	-6.921	0.275	10	58.7	121.3	15.43	-21.8	57.4
2005-090T00:05:15.99	-20	-1200	420935	418360	0.2	5.8	6.394	-6.389	0.252	12.2	58.3	121.7	15.41	-21.8	61.2
2005-090T02:05:15.99	-18	-1080	375649	373074	0.2	7.9	6.202	-6.197	0.233	13.7	58.1	121.9	15.4	-21.8	63
2005-090T04:05:15.99	-16	-960	331600	329025	0.3	10	6.048	-6.044	0.215	15.5	57.9	122.1	15.39	-21.8	64.9
2005-090T06:05:15.99	-14	-840	288538	285963	0.4	12.2	5.926	-5.922	0.201	17.8	57.7	122.3	15.38	-21.8	66.8
2005-090T08:05:15.99	-12	-720	246254	243679	0.5	14.3	5.83	-5.827	0.193	20.9	57.4	122.5	15.37	-21.8	68.7
2005-090T10:05:15.99	-10	-600	204572	201997	0.6	16.5	5.758	-5.754	0.196	25.2	57.2	122.8	15.36	-21.8	70.6
2005-090T12:05:15.99	-8	-480	163344	160769	0.8	18.8	5.705	-5.701	0.214	31.5	56.9	123.1	15.34	-21.8	72.4
2005-090T14:05:15.99	-6	-360	122444	119869	1.1	21.3	5.669	-5.663	0.26	42.1	56.6	123.4	15.32	-21.8	74.3
2005-090T15:05:15.99	-5	-300	102082	99507	1.4	22.7	5.657	-5.649	0.302	50.5	56.3	123.7	15.3	-21.8	75.3
2005-090T16:05:15.99	-4	-240	81766	79191	1.8	24.3	5.65	-5.638	0.37	63	55.9	124.1	15.27	-21.8	76.2
2005-090T17:05:15.99	-3	-180	61487	58912	2.5	26.2	5.648	-5.628	0.485	83.8	55.3	124.7	15.23	-21.8	77.1
2005-090T18:05:15.99	-2	-120	41255	38680	3.8	29.2	5.656	-5.61	0.717	124.9	54.2	125.8	15.15	-21.8	78.1
2005-090T19:05:15.99	-1	-60	21170	18595	7.6	36	5.689	-5.516	1.394	243.9	51.4	128.6	14.51	-21.8	79
2005-090T19:35:15.99	-1	-30	11472	8897	14.2	47.5	5.751	-5.144	2.571	452.8	47.8	132.2	14.08	-21.8	79.5
2005-090T19:50:15.99	0	-15	7186	4611	23	65.2	5.831	-4.143	4.104	733	47	133	12.58	-21.8	79.7
2005-090T20:00:15.99	0	-5	5269	2694	31.8	95.2	5.909	-1.894	5.597	1021.3	55.5	124.5	10.58	-21.8	79.9
2005-090T20:05:15.99	0	0	4977	2402	33.3	118.6	5.926	0.001	5.926	1087.7	66.3	113.7	9.25	-21.8	79.9
2005-090T20:10:15.99	0	5	5269	2694	30.6	141.7	5.909	1.896	5.597	1021.1	79	101	7.53	-21.8	80
2005-090T20:20:15.99	0	15	7187	4612	20.6	170.7	5.832	4.144	4.103	732.8	98	82	5.57	-21.8	80.2
2005-090T20:35:15.99	1	30	11474	8899	11.4	-172	5.751	5.145	2.57	452.7	110.4	69.6	4.49	-21.8	80.4
2005-090T21:05:15.99	1	60	21174	18599	4.6	-160.8	5.689	5.516	1.393	243.8	118	62	4.06	-21.8	80.9
2005-090T22:05:15.99	2	120	41262	38687	0.8	-154	5.656	5.611	0.713	124.9	121.8	58.2	3.43	-21.8	81.8
2005-090T23:05:15.99	3	180	61497	58922	-0.5	-151.1	5.648	5.628	0.476	83.8	123	57	3.35	-21.8	82.8
2005-091T00:05:15.99	4	240	81772	79197	-1.2	-149.2	5.647	5.636	0.353	63	123.5	56.5	3.31	-21.8	83.7
2005-091T01:05:15.99	5	300	102075	99500	-1.6	-147.6	5.65	5.643	0.277	50.5	123.9	56.1	3.29	-21.8	84.6
2005-091T02:05:15.99	6	360	122405	119830	-1.9	-146.3	5.656	5.651	0.224	42.1	124.1	55.9	3.27	-21.8	85.6
2005-091T04:05:15.99	8	480	163158	160583	-2.2	-144	5.672	5.67	0.15	31.6	124.3	55.7	3.25	-21.8	87.5
2005-091T06:05:15.99	10	600	204055	201480	-2.4	-141.9	5.692	5.691	0.1	25.2	124.4	55.6	3.25	-21.8	89.3
2005-091T08:05:15.99	12	720	245118	242543	-2.5	-140	5.716	5.716	0.065	21	124.4	55.6	3.24	-21.8	91.2
2005-091T10:05:15.99	14	840	286366	283791	-2.6	-138.1	5.743	5.742	0.056	18	124.4	55.6	3.24	-21.8	93.1
2005-091T12:05:15.99	16	960	327811	325236	-2.7	-136.3	5.771	5.77	0.079	15.7	124.3	55.7	3.25	-21.8	95
2005-091T14:05:15.99	18	1080	369462	366887	-2.7	-134.5	5.801	5.8	0.117	13.9	124.2	55.8	3.25	-21.8	96.9
2005-091T16:05:15.99	20	1200	411328	408753	-2.7	-132.8	5.832	5.83	0.161	12.5	124	56	3.25	-21.8	98.7
2005-091T20:05:15.99	24	1440	495713	493138	-2.8	-129.4	5.896	5.89	0.258	10.4	123.7	56.3	3.27	-21.8	102.5

## Titan 5TI (T4) Approximate Playback Timeline

Created March 25, 2005

Event or Observation	Observation Type (APGEN)	Observation Record Start Time (yyyy-dddTTh:mm:ss) (SCET)	Record Start Time - Reference Epoch (ddThh:mm)	Start Playback (Ground UTC)	Start Playback (Pacific Time)
CAPS_005SA_SURVEY002 RIDER	CAPS_16000	2005-090T05:50:00	-00T14:15	01-Apr Fri 04:40 PM	01-Apr Fri 08:40 AM
CDA_005DR_1500DUST044 RIDER	CDA_524	2005-090T05:50:00	-00T14:15	01-Apr Fri 04:40 PM	01-Apr Fri 08:40 AM
INMS_005SA_SURVEY004 RIDER	INMS_1498	2005-090T05:50:00	-00T14:15	01-Apr Fri 04:40 PM	01-Apr Fri 08:40 AM
MAG_005OT_SURVEY002 PRIME	MAG_1976	2005-090T05:50:00	-00T14:15	01-Apr Fri 04:40 PM	01-Apr Fri 08:40 AM
MIMI_005CO_SURVEY007 RIDER	MIMI_8000	2005-090T05:50:00	-00T14:15	01-Apr Fri 04:40 PM	01-Apr Fri 08:40 AM
RPWS_005SA_OUTSURVEY002 PRIME	RPWS_30464	2005-090T05:50:00	-00T14:15	01-Apr Fri 04:40 PM	01-Apr Fri 08:40 AM
CDA_005RI_1600RINGM007 RIDER	CDA_524	2005-090T06:27:07	-00T13:38	01-Apr Fri 04:42 PM	01-Apr Fri 08:42 AM
VIMS_005TI_NADIRMAP001_CIRS	VIMS_18432	2005-090T07:29:16	-00T12:35	01-Apr Fri 04:44 PM	01-Apr Fri 08:44 AM
CIRS_005TI_FIRNADCMP002_PRIME	CIRS_4000	2005-090T07:35:16	-00T12:29	01-Apr Fri 04:45 PM	01-Apr Fri 08:45 AM
CIRS_005TI_FIRNADCMP002_SI	ISS_SUPPORT_IMAGING	2005-090T07:35:16	-00T12:29	01-Apr Fri 04:45 PM	01-Apr Fri 08:45 AM
UVIS_005TI_FIRNADCMP002_CIRS	UVIS_5032	2005-090T07:35:16	-00T12:29	01-Apr Fri 04:45 PM	01-Apr Fri 08:45 AM
INMS_005TI_T4INBD001_CAPS	INMS_1498	2005-090T08:05:16	-00T12:00	01-Apr Fri 04:50 PM	01-Apr Fri 08:50 AM
CDA_005DR_1700DUST045 RIDER	CDA_524	2005-090T08:28:07	-00T11:37	01-Apr Fri 04:54 PM	01-Apr Fri 08:54 AM
RADAR_005TI_WARMUPT4001 RIDER	RADAR_364800	2005-090T11:20:16	-00T08:44	01-Apr Fri 05:24 PM	01-Apr Fri 09:24 AM
CIRS_005TI_FIRNADMAP001_ISS	CIRS_4000	2005-090T11:35:16	-00T08:29	01-Apr Fri 05:26 PM	01-Apr Fri 09:26 AM
ISS_005TI_COMBINED001_PRIME	ISS_Phot_1_by_1	2005-090T11:35:16	-00T08:29	01-Apr Fri 05:26 PM	01-Apr Fri 09:26 AM
VIMS_005TI_MEDRESMAP001_ISS	VIMS_18432	2005-090T11:35:16	-00T08:29	01-Apr Fri 05:26 PM	01-Apr Fri 09:26 AM
CDA_005RI_1800RINGM005 RIDER	CDA_524	2005-090T12:22:05	-00T07:43	01-Apr Fri 05:44 PM	01-Apr Fri 09:44 AM
CDA_005DR_1900DUST018 RIDER	CDA_524	2005-090T14:23:05	-00T05:42	01-Apr Fri 06:30 PM	01-Apr Fri 10:30 AM
RADAR_005TI_T4RADIOM001_PRIME	RADAR_364800	2005-090T14:35:16	-00T05:29	01-Apr Fri 06:35 PM	01-Apr Fri 10:35 AM
MAG_005TI_MAGTITAN001_PRIME	MAG_1976	2005-090T16:05:16	-00T03:59	01-Apr Fri 06:44 PM	01-Apr Fri 10:44 AM
CAPS_005TI_T4INBD003 RIDER	CAPS_16000	2005-090T18:05:16	-00T01:59	01-Apr Fri 06:57 PM	01-Apr Fri 10:57 AM
MIMI_005TI_T4INBD001_RADAR	MIMI_8000	2005-090T18:05:16	-00T01:59	01-Apr Fri 06:57 PM	01-Apr Fri 10:57 AM
RPWS_005TI_TIINTRMED001_PRIME	RPWS_30464	2005-090T18:05:16	-00T01:59	01-Apr Fri 06:57 PM	01-Apr Fri 10:57 AM
1WAY_TO_2WAY_GAP_M70METNON091	P/B GAP	~5 min. Playback Gap	n/a	01-Apr Fri 07:13 PM	01-Apr Fri 11:13 AM
CAPS_005TI_T4CLOSE002 RIDER	CAPS_16000	2005-090T19:05:16	-00T00:59	01-Apr Fri 07:10 PM	01-Apr Fri 11:10 AM
INMS_005TI_T4CLOSE001_ISS	INMS_1498	2005-090T19:05:16	-00T00:59	01-Apr Fri 07:10 PM	01-Apr Fri 11:10 AM
MIMI_005TI_T4CLOSE001_ISS	MIMI_8000	2005-090T19:05:16	-00T00:59	01-Apr Fri 07:10 PM	01-Apr Fri 11:10 AM
CIRS_005IC_DSCALSHRT002 RIDER	CIRS_4000	2005-090T19:35:16	-00T00:29	01-Apr Fri 07:19 PM	01-Apr Fri 11:19 AM
ISS_005TI_HIGHRESNA001_PRIME	ISS_Phot_1_by_1	2005-090T19:35:16	-00T00:29	01-Apr Fri 07:19 PM	01-Apr Fri 11:19 AM
VIMS_005TI_HIRES001_ISS	VIMS_18432	2005-090T19:40:16	-00T00:24	01-Apr Fri 07:22 PM	01-Apr Fri 11:22 AM
CIRS_005TI_FIRLMBT002_PRIME	CIRS_4000	2005-090T20:05:16	00T00:00	01-Apr Fri 07:48 PM	01-Apr Fri 11:48 AM
CIRS_005TI_FIRLMBT002_SI	ISS_SUPPORT_IMAGING	2005-090T20:05:16	00T00:00	01-Apr Fri 07:48 PM	01-Apr Fri 11:48 AM

## Titan 5TI (T4) Approximate Playback Timeline

Created March 25, 2005

Event or Observation	Observation Type (APGEN)	Observation Record Start Time (yyyy- dddThh:mm:ss) (SCET)	Record Start Time - Reference Epoch (ddThh:mm)	Start Playback (Ground UTC)	Start Playback (Pacific Time)
ISS_005TI_FIRLMBT002_CIRS	ISS_Phot_1_by_1	2005-090T20:05:16	00T00:00	01-Apr Fri 07:48 PM	01-Apr Fri 11:48 AM
VIMS_005TI_LIMBCOMB001_CIRS	VIMS_18432	2005-090T20:35:16	00T00:30	01-Apr Fri 08:03 PM	01-Apr Fri 12:03 PM
CIRS_005TI_FIRLMBAER002_PRIME	CIRS_4000	2005-090T20:50:16	00T00:45	01-Apr Fri 08:25 PM	01-Apr Fri 12:25 PM
CIRS_005TI_FIRLMBAER002_SI	ISS_SUPPORT_IMAGING	2005-090T20:50:16	00T00:45	01-Apr Fri 08:25 PM	01-Apr Fri 12:25 PM
ISS_005TI_FIRLMBAER002_CIRS	ISS_Phot_1_by_1	2005-090T20:50:16	00T00:45	01-Apr Fri 08:25 PM	01-Apr Fri 12:25 PM
CAPS_005TI_T4OUTBND002_RIDER	CAPS_16000	2005-090T21:05:16	00T01:00	01-Apr Fri 08:30 PM	01-Apr Fri 12:30 PM
INMS_005TI_T4OUTBD001_CIRS	INMS_1498	2005-090T21:05:16	00T01:00	01-Apr Fri 08:30 PM	01-Apr Fri 12:30 PM
MIMI_005TI_T4OUTBND001_CIRS	MIMI_8000	2005-090T21:05:16	00T01:00	01-Apr Fri 08:30 PM	01-Apr Fri 12:30 PM
CIRS_005TI_FIRLMBINT002_PRIME	CIRS_4000	2005-090T21:20:16	00T01:15	01-Apr Fri 08:34 PM	01-Apr Fri 12:34 PM
CIRS_005TI_FIRLMBINT002_SI	ISS_SUPPORT_IMAGING	2005-090T21:20:16	00T01:15	01-Apr Fri 08:34 PM	01-Apr Fri 12:34 PM
ISS_005TI_FIRLMBINT002_CIRS	ISS_Phot_1_by_1	2005-090T21:20:16	00T01:15	01-Apr Fri 08:34 PM	01-Apr Fri 12:34 PM
CAPS_005SA_SURVEY005_RIDER	CAPS_16000	2005-090T22:05:16	00T02:00	01-Apr Fri 08:53 PM	01-Apr Fri 12:53 PM
CIRS_005TI_FIRNADCMP005_UVIS	CIRS_4000	2005-090T22:05:16	00T02:00	01-Apr Fri 08:53 PM	01-Apr Fri 12:53 PM
ISS_005TI_EUVFUV001_UVIS	ISS_Phot_1_by_1	2005-090T22:05:16	00T02:00	01-Apr Fri 08:53 PM	01-Apr Fri 12:53 PM
MIMI_005CO_SURVEY003_RIDER	MIMI_8000	2005-090T22:05:16	00T02:00	01-Apr Fri 08:53 PM	01-Apr Fri 12:53 PM
RPWS_005SA_OUTSURVEY003_PRIME	RPWS_30464	2005-090T22:05:16	00T02:00	01-Apr Fri 08:53 PM	01-Apr Fri 12:53 PM
UVIS_005TI_EUVFUV001_PRIME	UVIS_5032	2005-090T22:05:16	00T02:00	01-Apr Fri 08:53 PM	01-Apr Fri 12:53 PM
MAG_005OT_SURVEY003_PRIME	MAG_1976	2005-091T00:05:16	00T04:00	01-Apr Fri 09:15 PM	01-Apr Fri 01:15 PM
CIRS_005TI_MIRLMBMAP002_PRIME	CIRS_4000	2005-091T00:35:16	00T04:30	01-Apr Fri 09:20 PM	01-Apr Fri 01:20 PM
CIRS_005TI_MIRLMBMAP002_SI	ISS_SUPPORT_IMAGING	2005-091T00:35:16	00T04:30	01-Apr Fri 09:20 PM	01-Apr Fri 01:20 PM
ISS_005TI_MIRLMBMAP002_CIRS	ISS_Phot_1_by_1	2005-091T00:35:16	00T04:30	01-Apr Fri 09:20 PM	01-Apr Fri 01:20 PM
CIRS_005TI_FIRNADCMP003_PRIME	CIRS_4000	2005-091T04:05:16	00T08:00	01-Apr Fri 10:28 PM	01-Apr Fri 02:28 PM
CIRS_005TI_FIRNADCMP003_SI	ISS_SUPPORT_IMAGING	2005-091T04:05:16	00T08:00	01-Apr Fri 10:28 PM	01-Apr Fri 02:28 PM
ISS_005TI_FIRNADCMP003_CIRS	ISS_Phot_1_by_1	2005-091T04:05:16	00T08:00	01-Apr Fri 10:28 PM	01-Apr Fri 02:28 PM
UVIS_005TI_FIRNADCMP003_CIRS	UVIS_5032	2005-091T04:05:16	00T08:00	01-Apr Fri 10:28 PM	01-Apr Fri 02:28 PM
CIRS_005TI_MIDIRTMAP003_PRIME	CIRS_4000	2005-091T08:05:16	00T12:00	01-Apr Fri 11:07 PM	01-Apr Fri 03:07 PM
CIRS_005TI_MIDIRTMAP003_SI	ISS_SUPPORT_IMAGING	2005-091T08:05:16		01-Apr Fri 11:07 PM	01-Apr Fri 03:07 PM
INMS_005SA_SURVEY005_RIDER	INMS_1498	2005-091T08:05:16	00T12:00	01-Apr Fri 11:07 PM	01-Apr Fri 03:07 PM
ISS_005TI_MIDIRTMAP003_CIRS	ISS_Phot_1_by_1	2005-091T08:05:16	00T12:00	01-Apr Fri 11:07 PM	01-Apr Fri 03:07 PM
UVIS_005SW_IPHSURVEY018_RIDER	UVIS_5032	2005-091T15:22:00	00T19:16	01-Apr Fri 08:05 PM	01-Apr Fri 12:05 PM
CIRS_005IC_DSCAL1155_RIDER	CIRS_4000	2005-091T17:00:00	00T20:54	01-Apr Fri 08:09 PM	01-Apr Fri 12:09 PM
INMS_005CO_MAGBNDCOR001_CAPS	INMS_1498	2005-092T00:07:41	01T04:02	02-Apr Sat 01:21 AM	01-Apr Fri 05:21 PM
INMS_005CO_MAGBNDCOR001_CAPS	INMS_1498	2005-092T00:07:41	01T04:02	02-Apr Sat 01:21 AM	01-Apr Fri 05:21 PM

Last Updated: March 29, 2005 - Subject to change.

Orbiter UTC is the actual time of the spacecraft event.

Ground UTC is the time when the signal reaches Earth. It takes about 1 hour and 16 minutes for the signal to travel from the spacecraft to the Earth.